1056-11-346   **John Voight*** (`jvoight@gmail.com`), Department of Mathematics and Statistics, University of
Vermont, 16 Colchester Ave, Burlington, VT 05401. *The Gauss higher relative class number
problem.*

We generalize Gauss' problem of determining all imaginary quadratic fields of small class number to the case of the
higher relative class numbers of CM fields. These class numbers appear in the formula for certain special values of the
L-function associated to such a CM extension. Assuming the 2-adic Iwasawa main conjecture, we find all CM fields
with higher relative class number at most 16: there are at least 31 and at most 34 such fields, and exactly one is not
abelian. (Received September 01, 2009)